TACKLING FOREST COVER LOSS IN MALAWI BY SWITCHING TO BIOGAS

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POLICY BRIEF

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TACKLING FOREST COVER LOSS IN MALAWI BY SWITCHING TO BIOGAS

Malawi University of Science and Technoloogy and Green Impact Technologies

EXECUTIVE SUMMARY

It is estimated that 96% of Malawians rely on biomass (firewood and charcoal) for cooking, thereby increasingly driving depletion of forest cover across the country, especially in communities that are close to main urban centers. Integrated Household Survey (IHS)4 figures show that increasing population has added approximately 4.8 million more people as users of firewood and charcoal for cooking.

Electricity access remains at 11% meaning that majority are not connected to the grid and rely on charcoal for cooking and heating. This lucrative charcoal and fuelwood market drives deforestation. In addition to erratic supply, increasing electricity tariffs have meant that more households are turning to biomass as their fuel of choice as it is perceived to be cheaper and readily available on the market.

Despite reported high adoption of alternative cooking fuels such as biogas in most sub-Saharan African countries, uptake in Malawi has been stagnant. A study conducted by Malawi University of Science and Technology in partnership with Green Impact Technologies revealed Tsangano Market has high potential for biogas generation where a 150m3 digester could be developed.

POLICY RECOMMENDATIONS

1. **The Government of Malawi should consider reviewing tax regimes on importation and sales of biogas components to stimulate its uptake**
   Despite the recent review of taxes on renewable energy products by government, some components used in developing biogas systems still attract taxes. To make Biogas competitive against charcoal, firewood and electricity this can only be achieved if there is progressive laws and a conducive environment to increase its uptake by new developers, users and make it a first choice fuel for those using it as back-up. This could be achieved if import duty and value added taxes are waived on all equipment to incentivise private sector investment in the Biogas value chain and reduce prices for consumers.

2. **Private sector players in the biogas value chain should introduce incentives that could reduce barriers to entry and make biogas, reliable and affordable for most consumers**
   The study established that market barriers such as high initial costs for new users are contributing to low uptake of the gas as a cooking fuel. Exploring innovative credit facilities, pay as you go models and smaller gas cylinders are some initiatives that would positively drive uptake. Furthermore, there is need for investment in increasing the supply and distribution network for biogas systems being developed to make refilling easier for consumers.

3. **Government, private sector and NGOs should consider coordinated market activation and awareness campaigns aimed at dispelling negative perceptions of safety and cost of biogas**
   There are unfounded fears that gas is unsafe and that it is fuel for the wealthy. Market activation and awareness campaigns on the safety, efficiency and affordability of gas for cooking could have a positive impact on driving its uptake as an alternative cooking fuel.

TESTIMONIALS

"When I heard that MUST and GIT are developing a biogas plant that will make me save time spent collecting firewood and make savings in procuring charcoal I was happy. Since then, I have been keenly looking forward to use gas for cooking." Nancy Phiri, entrepreneur- she owns a restaurant at Tsangano Market.

"Biogas is the only alternative cooking fuel that as a department we are keen to promote to replace charcoal, which is leading to rampant deforestation in Malawi." Mr Joseph Kalowekamo, Assistant Director, Department of Energy Affairs

"As a regulator we are aware of the challenges facing biogas uptake in Malawi, hence we are in the process of developing a regulatory framework that will guide, and promote the development of biogas systems in Malawi. Malawi

Energy Regulatory Authority (MERA) has also lined up plenty of activities to create awareness and address issues of safety that may hinder biogas adoption in Malawi." Mrs Alinafe Mkaveya, Director of Fuels, MERA

"As an entrepreneur, I see that biogas could be one of the solutions to energy problems in Malawi. I am more than willing to scale up my business to reach rural areas if there could be provision of incentives as the cost of operation is high if we are to scale to rural communities." Admore Chiumia, Managing Director, Green Impact Technologies.

"Adoption of biogas technology is like killing two birds with a single stone. The technology is a solution to waste as well as energy challenges currently facing Malawi. All stakeholders can be assured that for every single Kwacha invested in the biogas technology multiple challenges are solved." Hope Chamdimba, Staff Associate in Energy Resources at Malawi University of Science and Technology.

KEY FINDINGS

Energy Expenditures

Although the study found mostly used source of heating energy is charcoal, the study also discovered that electricity is the highest average expenditure for business operations. Table 1 shows expenditures of different sources of energy at Tsangano Turn-off Market.

Tsangano Market restaurants and the surrounding households report high expenses on cooking.

The deployment of biogas systems will save women from unsafe cooking fuels that present health hazards to women as they do most of the cooking. Women are exposed to harmful fumes during cooking due to indoor air pollution from charcoal and firewood as they do most of the cooking. Table 2 shows different potential types of wastes available for biogas production at Tsangano Turnoff Market.

Tsangano Market was found to be a busy daily market, with a number of products on sale and too much waste being generated with cabbage, Irish potatoes and green beans recording massive production daily.

The Market for biogas in Malawi has potential to grow

The study established great potential for biogas at Tsangano and potential market growth in Malawi especially in the urban and peri-urban areas, where electricity supply has been erratic for several years. Coincidentally, urban households are the main market for charcoal and firewood. The study found that weaning off demand for charcoal and firewood in these areas would be an effective strategy in restoration of damaged forest areas. The main challenge is making biogas readily available and cost competitive to charcoal and firewood. It was further established that affordability and availability could make biogas a competitive alternative cooking fuel for rural households across Malawi.

CONCLUSION

1. Malawi added more people to the population of those cooking using biomass fuels, further straining the already depleted forest areas. IHS 2018 showed that approximately, 4.8 more users of firewood and charcoal were added to the population. It is imperative that alternative cooking fuels such as biogas are given more emphasis to drive uptake and use, to wean off reliance on charcoal and firewood.
2. Recent trends in electricity and fuel pricing show that biogas will become a more cost competitive cooking fuel in Malawi. Electricity tariffs were recently revised upwards and can only continue to increase while prices of petrol and diesel have been fluctuating upwards driving up the cost of transporting charcoal and firewood to urban centers. This is an opportunity for the Government, development partners and private sector to put in place necessary strategies to promote the benefits of biogas as an efficient alternative cooking fuel and drive uptake, especially in urban and peri urban areas.
3. Biogas and associated equipment such as gas cylinders were subjected to import and value added taxes which made it more expensive option for consumers. Revising the tax regimes by government in the recent budget will positively impact willingness to pay for the gas among consumers and consequently help in weaning off charcoal and firewood users, contributing to conservation of forests.

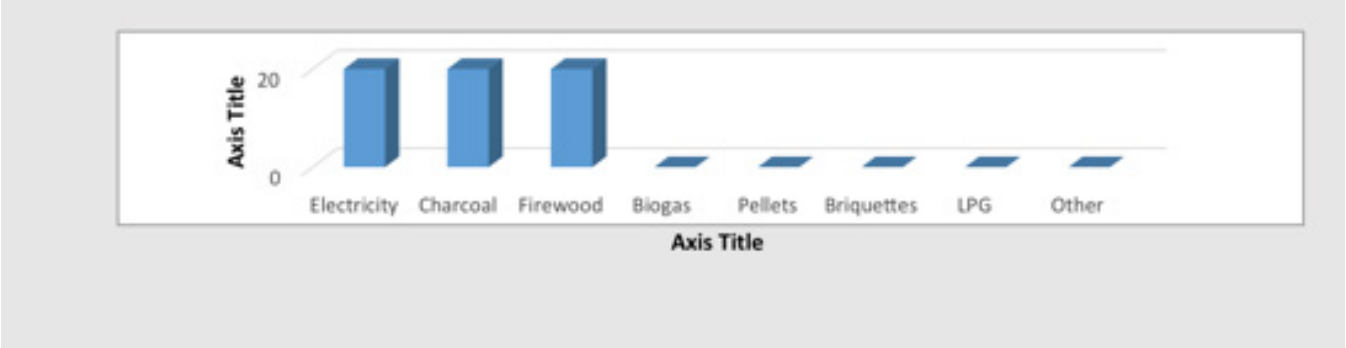


Figure 1: Expenditures of different sources of energy at Tsangano Turnoff Market

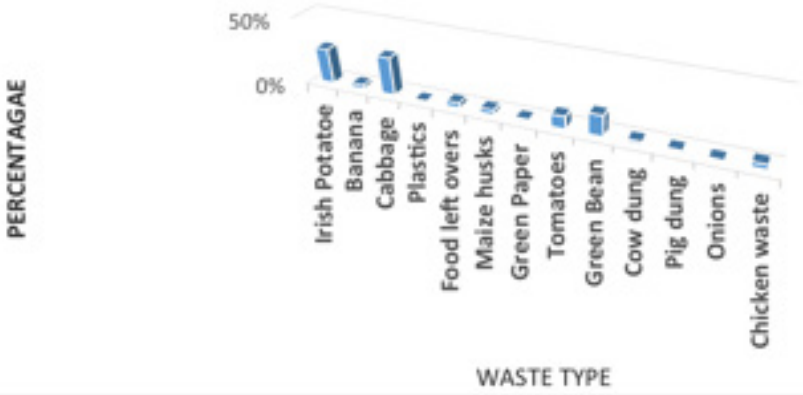
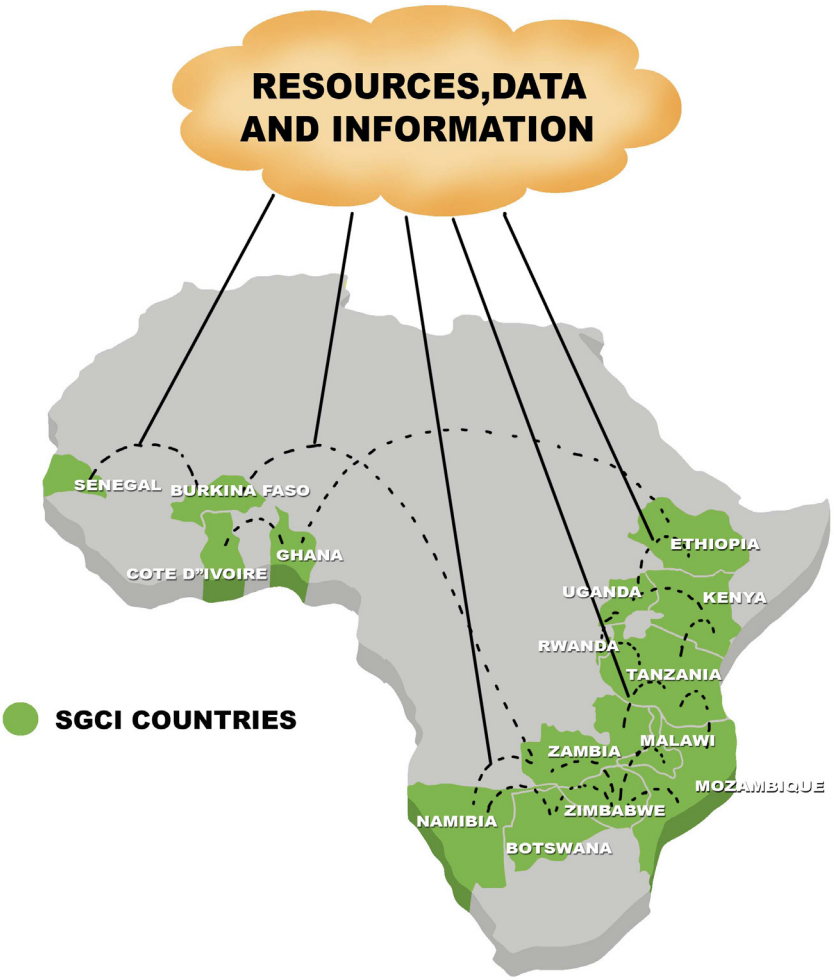


Figure 2: Different Potential types of waste available as a feedstock for biogas generation at Tsangano Turnoff Market

Figure 3: The Tsangano Biogas Project

Tanzania



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